UNITED STATES PATENT AND TRADEMARK OFFICE

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte STEPHEN FIFE SHELDON, ARTHUR VARGAS LOPES,
GRACE KWAN-ON AU, and AHMAD SAID GHAZAL

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Appeal 2009-010754
Application 10/800,493
Technology Center 2100

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Before LANCE LEONARD BARRY, JAY P. LUCAS, and
ST. JOHN COURTENAY III, *Administrative Patent Judges*.

COURTENAY, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

This is an appeal under 35 U.S.C. § 134(a) from the Examiner's final
rejection of claims 1, 7-15, 21-29, and 35-42, which are all the claims
pending in the application. Claims 2-6, 16-20, and 30-34 were cancelled
during prosecution. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm-in-part and enter new grounds of rejection under 35 U.S.C.

§§ 101, 112, second paragraph, pursuant to our authority under 37 C.F.R.

§ 41.50(b).

Invention

Appellants' invention relates generally to graphical user interfaces

(Spec. 1). More particularly, the invention on appeal is directed to methods

and apparatus for representing a sequence of interactions between Web

service objects. (Spec. 5, para. [0010]).

Representative Claim 1

1.　　　　A method of processing a database query, the query including
an expression, the method including:

performing expression optimization the expression;

performing further query optimization to produce a result;

saving the result in a memory;

performing expression optimization before further query
optimization; and

where the expression includes a sub-expressions ("SE"), and
where the expression optimization includes:

representing the query as a tree structure;

representing the expression in the tree structure as a parent node
having a first child node and a second child node;

where the first child node represents the sub-expression;

where the second child node represents the portion of the
expression that is not the sub-expression; and

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where the parent node represents an operation between the first child node and the second child node;

determining that the second child node represents the constant 0 and that the parent node represents an arithmetic operation selected from the group consisting of addition and subtraction; and

in response, removing the parent node and its children from the tree structure and inserting the first child node in its place.

Claim 29

A database system including:

a massively parallel processing system including:

one or more nodes;

a plurality of CPUs, each of the one or more nodes providing access to one or more CPUs;

a plurality of data storage facilities each of the one or more CPU s providing access to one or more data storage facilities;

a process for execution on the massively parallel processing system for processing a database query, the query including an expressions, the process including:

performing expression optimization on the expressions;

performing further query optimization to produce a result;

saving the result in a memory;

where the expression optimization is performed before the further query optimization; and

where the expression includes a sub-expression ("SE"), and where expression optimization includes:

representing the query as a tree structure;

representing the expression in the tree structure as a parent node having a first child node and a second child node;

where the first child node represents the sub-expression;

where the second child node represents the portion of the expression that is not the sub-expression; and

where the parent node represents an operation between the first child node and the second child node;

determining that the second child node represents the constant 0 and that the parent node represents an arithmetic operation selected from the group consisting of addition and subtraction; and

in response, removing the parent node and its children from the tree structure and inserting the first child node in its place.

Rejections

1. Claims 1, 15, and 29 stand rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement and written description requirements.

2. Claims 1, 7-14, 29, and 35-42 stand rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter.

3. Claims 1, 7-9, 11-13, 15, 21-23, 25-27, 29, 35-37, and 39-41 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the

combination of Paulley (US Pat. 6,665,664 B2) and Warner (US Pat. App. Pub. 2005/0055338 A1).

4. Claims 10, 14, 24, 28, 38, and 42 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of Paulley and Nuutila, Esko, "Transitive Closure," Helsinki University of Technology, October 9, 1995, http://www.cs.hut.fi/~enu/tc.html (hereinafter "Nuutila").

Objection to the Drawings

On page 8 of the principal Brief, Appellants assert that the drawing objections are improper and should be withdrawn. However, this relates to a petitionable issue and not an appealable issue. *See* MPEP §1.113(a) "Petition may be taken to the Director in the case of objections or requirements not involved in the rejection of any claim (§ 1.181)." Thus, the relief sought by the Appellants would have been properly presented by a petition to the Technology Center Director under 37 C.F.R. § 1.181 instead of by appeal to this Board.

35 U.S.C. §112, first paragraph rejection of claims 1, 15, and 29

In the rejection, the Examiner states that "the limitations 'performing further query optimization to produce a result' and 'saving the result in a memory' are not enabled and do not appear in the specification." (Ans. 4).

However, for essentially the same reasons argued by Appellants in the Briefs, we reverse the Examiner's rejection of claims 1, 15, and 29 under 35 U.S.C. §112, first paragraph, for failing to comply with the enablement requirement. (*See* App. Br. 5-6; Reply Br. 2-3). We particularly observe

that "[t]he Examiner agrees that Fig. 3 and par. 20 [of the Specification]
describe 'performing further query optimization to produce a result,' where
the 'further query optimization' is performed by the 'optimizer 325' and the
'result' is the 'executable steps.'" (Ans. 24).

For the reasons argued by Appellants (App. Br. 5-6), we do not agree
with the Examiner's conclusion that the claimed "result" lacks an enabling
disclosure with respect to its full scope. (*Id.*). To the extent that the
remaining dispute may pertain to the enablement of "saving the result in a
memory" (claim1), we conclude that the general description of multiple
storage facilities (e.g. data storage facilities $120_{1 \ldots N}$) (Spec. para. [0017];
Fig. 1), in addition to the general knowledge of the artisan, is sufficient to
demonstrate enablement. We observe that the Examiner also admits that
"one or ordinary skill in the art would understand what saving executable
steps in a memory means." (Ans. 24).

As pointed out by Appellants (App. Br. 5), "the scope of enablement
is not limited to what is disclosed in the specification; it also includes 'what
would be known to one of ordinary skill in the art without undue
experimentation.'" *See Abbott Labs v. Andrx Pharmaceuticals, Inc.,* 452
F.3d 1331, 1341 (Fed. Cir. 2006) (citation omitted). Here, we agree with
Appellants that the Examiner erred by not fully considering what is
disclosed in the Specification, and what would be known to one of ordinary
skill in the art without undue experimentation.

The Examiner additionally presents a rejection under the written
description requirement of § 112, first paragraph. (Ans. 4). Although we
decline to consider the knowledge of the artisan as a factor in satisfying the

written description requirement,[1] we nevertheless also find Appellants'
Figure 3 and the associated description (para. 0020) of optimizer 325 (and
associated executable steps "result") sufficient to demonstrate possession of
the claimed feature of "performing further query optimization to produce a
result." (Claim 1). Likewise, we find the description of the multiple storage
facilities (e.g. data storage facilities $120_{1 \ldots N}$) (Spec. para. [0017]; Fig. 1)
sufficient to demonstrate possession of the claimed feature of "saving the
result in a memory." (Claim 1). Therefore, we also reverse the Examiner's
rejection under 35 U.S.C. § 112, first paragraph, for failing to comply with
the written description requirement.

35 U.S.C. § 101 Rejection – claims 1, 7-14, 29, and 35-42

Issue: Are the claims on appeal directed to non-statutory subject matter
under § 101?

In the rejection under § 101, the Examiner concludes that claims 1, 7-
14, 29, and 35-42 are: (1) directed to an abstract idea, and (2) not tied to a
particular machine. (Ans. 4-5). In the response to arguments section of the

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[1] One shows "possession" by descriptive means such as words, structures,
figures, diagrams, and formulas that fully set forth the claimed invention.
Lockwood v. American Airlines, Inc., 107 F.3d 1565, 1572 (Fed. Cir. 1997).
It is not sufficient for purposes of the written description requirement that
the disclosure, when combined with the knowledge in the art, would lead
one to speculate as to modifications that the inventor might have envisioned,
but failed to disclose. A description which renders obvious the invention for
which the benefit of an earlier date is sought is not sufficient. *Id.*

Answer, the Examiner essentially restates that the aforementioned claims do not comply with Bilski's machine-or-transformation test (MOT). (Ans. 25).

We note that the Supreme Court considers the machine-or-transformation test as a useful and important clue, an investigative tool, for determining whether some claimed inventions are processes under § 101. *See Bilski v. Kappos*, 130 S.Ct. 3218, 3227 (2010). As articulated by the Court of Appeals for the Federal Circuit, "[t]he machine-or-transformation test is a two-branched inquiry; an applicant may show that a process claim satisfies § 101 either by showing that his claim is tied to a particular machine, or by showing that his claim transforms an article." *In re Bilski*, 545 F.3d 943, 961-62 (Fed. Cir. 2008) (en banc).

Here, we note that we are not permitted to read limitations from the Specification into the claims.[2] In particular, we conclude that the scope of the "memory" of claim 1 is not limited to a machine memory, but also broadly encompasses a human memory that is capable of saving a result as a mental step. Therefore, we conclude that claim 1 is not tied to a particular machine under the first prong of the MOT test. We also conclude that claim 1 does not transform an article under the second prong. Rather, claim 1

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[2] A basic canon of claim construction is that one may not read a limitation into a claim from the written description. *Renishaw plc v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1248 (Fed. Cir. 1998). Here, we observe that Appellants' Specification expressly guides that "[i]t is intended that the scope of the invention be limited not by this detailed description, but rather by the claims appended hereto." (Spec. para. [0046]).

merely manipulates data. However, even if claim 1 does not satisfy the MOT test, this does not end our inquiry under § 101.[3]

We also note that claim terms are not interpreted in a vacuum, devoid of the context of the claim as a whole. *See Hockerson-Halberstadt, Inc. v. Converse Inc.,* 183 F.3d 1369, 1374 (Fed. Cir. 1999) ("proper claim construction . . . demands interpretation of the entire claim in context, not a single element in isolation."); *ACTV, Inc. v. Walt Disney Co.,* 346 F.3d 1082, 1088 (Fed. Cir. 2003) ("While certain terms may be at the center of the claim construction debate, the context of the surrounding words of the claim also must be considered....").

In considering the language of claim 1 as a whole, we agree with the Examiner's conclusion that the process of claim 1 "could be performed by a human writing on a piece of paper." (Ans. 5).[4]   Because all of claim 1's method steps can be performed in the human mind, or by a human using a pen and paper, we conclude that unpatentable mental processes fall within the subject matter of claim 1.[5]

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[3] *See Cybersource Corp. v. Retail Decisions, Inc.,* No. 2009-001358, 2011 WL 3584472, slip op. *9, (Fed. Cir. 2011)("the Supreme Court has made clear that a patent claim's failure to satisfy the machine-or-transformation test is not dispositive of the § 101 inquiry.").

[4] "Phenomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work." *In re Ferguson,* 558 F.3d 1359, 1363 (Fed. Cir. 2009) (quoting *Gottschalk v. Benson,* 409 U.S. 63, 67 (1972)).

[5] *See Cybersource,* slip op. *12 ("It is clear that unpatentable mental processes are the subject matter of claim 3. All of claim 3's method steps

Because "a method that can be performed by human thought alone is merely an abstract idea and is not patent-eligible under § 101," *Cybersource*, slip op. *12, we sustain the Examiner's § 101 rejection of claim 1, and claims 7-14 which depend therefrom.

Claim 29 - § 101

We reach a different conclusion regarding independent claim 29. In contrast to claim 1, claim 29 positively recites a statutory machine ("a massively parallel processing system including . . . a plurality of CPUs"). Therefore, when considering the claim language *as a whole*, we conclude that interpreting the "memory" of claim 29 as encompassing a human memory would be overly broad and unreasonable. Therefore, we reverse the Examiner's rejection of claim 29 and dependent claims 35-42 under § 101. However, using our authority under 37 C.F.R. §41.50(b), we enter a new ground of rejection for claims 29 and 35-42 under 35 U.S.C. § 112, second paragraph, as discussed *infra*.

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can be performed in the human mind, or by a human using a pen and paper. Claim 3 does not limit its scope to any particular fraud detection algorithm, and no algorithms are disclosed in the '154 patent's specification. Rather, the broad scope of claim 3 extends to essentially any method of detecting credit card fraud based on information relating past transactions to a particular "Internet address," even methods that can be performed in the human mind."); *see also In re Nuijten,* 500 F.3d 1346, 1354 (Fed. Cir. 2007) ("The four categories [of § 101] together describe the exclusive reach of patentable subject matter. If a claim covers material not found in any of the four statutory categories, that claim falls outside the plainly expressed scope of § 101 even if the subject matter is otherwise new and useful.") .

Claim 15 – New Grounds of Rejection under § 101

We also enter a new ground of rejection for independent claim 15 and associated dependent claims 21-28 under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Claim 15, being directed to a computer program stored on a tangible storage medium, is characterized by some as a "Beauregard claim." [6]

In analyzing claim 15, we follow the recent guidance from the Court of Appeals for the Federal Circuit: Thus, "regardless of what statutory category ('process, machine, manufacture, or composition of matter,' 35 U.S.C. § 101) a claim's language is crafted to literally invoke, we look to the underlying invention for patent-eligibility purposes," *Cybersource*, slip op. *17. (underline added). Following the Federal Circuit's approach in *Cybersource*, slip op. *18, we analyze the underlying invention of claim 15 as a process. Because the process invoked by the executable instructions of claim 15 is essentially similar to that of claim 1, we reject claim 15 under § 101 for the same reasons discussed above regarding claim 1. Thus, we conclude that all of claim 15's instructions (analyzed as process steps) can also be performed in the human mind, or by a human using a pen and paper. Therefore, we conclude that unpatentable mental processes fall within the subject matter of claim 15.[7]

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[6] *See In re Beauregard*, 53 F.3d 1583 (Fed. Cir. 1995).
[7] *Cybersource*, slip op. *19 ("That purely mental processes can be unpatentable, even when performed by a computer, was precisely the holding of the Supreme Court in *Gottschalk v. Benson*.").

Claim 29 – New Grounds of Rejection under § 112, second paragraph

We also enter a new ground of rejection for independent claim 29 and associated dependent claims 35-42 under 35 U.S.C. § 112, second paragraph, as being indefinite. As noted above, claim 29 recites "a massively parallel processing *system* including . . . a plurality of CPUs." However, hybrid claim 29 is also directed to "a *process* for execution on the massively parallel processing system . . . ." (emphasis added). A hybrid claim directed to a system and a method for using that system is indefinite. *IPXL Holdings, L.L.C. v. Amazon.com, Inc.*, 430 F.3d 1377, 1384 (Fed. Cir. 2005) (*citing Ex parte Lyell,* 17 U.S.P.Q.2d 1548 (B.P.A.I. 1990))("[R]eciting both an apparatus and a method of using that apparatus [in a single claim] renders [such] claim indefinite under section 112, paragraph 2.").

Rejections under 35 U.S.C. § 103

Issues

Based upon our review of the administrative record, we have determined that the following issues are dispositive in this appeal regarding the §103 rejections:

Under §103, did the Examiner err in finding that the combination of Paulley and Warner would have taught or suggested the following limitations of claim 1:

> determining that the second child node represents the constant 0 and that the parent node represents an arithmetic operation selected from the group consisting of addition and subtraction; and

> in response, removing the parent node and its children from the tree structure and inserting the first child node in its place.

We observe that the aforementioned disputed limitations are recited in each independent claim on appeal. Based upon our review of the record, we reverse the Examiner's §103 rejections for essentially the same reasons argued by Appellants in the Briefs. (App. Br. 6-8; Reply Br. 6-8). We observe that the Examiner admits that Paulley does not teach the aforementioned limitations. (Ans. 8). The Examiner looks to the teachings and suggestions of Warner to remedy the admitted deficiencies of Paulley. (*Id.*).

We agree with the Examiner that Warner's Figure 1 and paragraph 0005 would have taught or suggested "the parent node represents an arithmetic operation selected from the group consisting of addition and subtraction." (Claim 1). However, regarding the remaining disputed limitations, we find persuasive Appellants' contentions as follows:

> Even assuming the value of one of the nodes 108 or 110 in Warner's Fig. 1 is "0," Warner does not teach "removing the parent node and its children from the tree structure and inserting the first child node in its place," as required by independent claims 1, 15, and 29. Warner teaches "propagating" the result of the evaluation of the operator at 104 up the tree. Warner at paragraph [0020], lines 10-13. "Propagating" is not the same as "removing . . . and inserting." In particular, Warner does not teach removing nodes 104, 108, and 110 and inserting one of the child nodes (108 or 110) in its place.

(App. Br. 7, ¶1).

We find unpersuasive the Examiner's contentions to the contrary that appear to rely on hindsight reconstruction as a means to fill the gaps in the combined teachings of the references. (Ans. 26-27). For these reasons, we reverse the Examiner's rejection under § 103 of each independent claim, and

we also reverse the Examiner's §103 rejections of the associated dependent claims.

DECISION

We reverse the Examiner's rejection of claims 1, 15, and 29 under 35 U.S.C. §112, first paragraph (enablement and written description).

We reverse the Examiner's rejection of claims 29 and 35-42 as being directed to non-statutory subject matter under 35 U.S.C. §101.

We reverse the Examiner's rejections under 35 U.S.C. § 103 of claims 1, 7-15, 21-29, and 35-42.

We affirm the Examiner's rejection of claims 1 and 7-14 as being directed to non-statutory subject matter under 35 U.S.C. §101.

New Grounds of Rejection

In a new ground of rejection, we reject claims 29 and 35-42 under 35 U.S.C. § 112, second paragraph, as being indefinite.

We also enter a new ground of rejection against claims 15 and 21-28 as being directed to non-statutory subject matter under 35 U.S.C. §101.

This decision contains a new ground of rejection pursuant to 37 C.F.R. § 41.50(b) (2010). 37 C.F.R. § 41.50(b) provides "[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review."

37 C.F.R. § 41.50(b) also provides that the appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of the appeal as to the rejected claims:

(1) Reopen prosecution. Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the proceeding will be remanded to the examiner. . . .

(2) Request rehearing. Request that the proceeding be reheard under § 41.52 by the Board upon the same record. . . .

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See also* 37 C.F.R. § 41.50(f).

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AFFIRMED-IN-PART

37 C.F.R. § 41.50(b)

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